



JUL 20 2007

10CFR50.73

LR-N07-0161

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington DC 20555-001

LER 311/07-002
Salem Nuclear Generating Station Unit 2
Facility Operating License No. DPR-75
NRC Docket No. 50-311

SUBJECT: Reactor Trip Due To A Breach In The Condensate System

This Licensee Event Report, "Reactor Trip Due To A Breach In The Condensate System" is being submitted pursuant to the requirements of the Code of Federal Regulations 10CFR50.73(a)(2)(iv)(A).

The attached LER contains no commitments. Should you have any questions or comments regarding this submittal, please contact Mr. H. Berrick at 856-339-1862.

Sincerely,

A handwritten signature in black ink, appearing to be "R. Braun", written over a horizontal line.

Robert Braun
Site Vice President
Salem Generating Station

Attachments (1)

FE22

NRR

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Document Control Desk

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cc Mr. S. Collins, Administrator - Region I
 U. S. Nuclear Regulatory Commission
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LICENSEE EVENT REPORT (LER)

Estimated burden per response to comply with this mandatory collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME Salem Generating Station - Unit 2	2. DOCKET NUMBER 05000311	3. PAGE 1 OF 4
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4. TITLE Reactor Trip Due to a Breach in the Condensate System

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
05	24	2007	2007	002	00	07	23	2007	None	
									FACILITY NAME	DOCKET NUMBER
									None	

9. OPERATING MODE 1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: (Check all that apply)											
	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)								
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)								
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)								
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)								
10. POWER LEVEL 100%	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)								
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)								
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)								
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER								
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A								

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME Howard Berrick, Senior Licensing Engineer	TELEPHONE NUMBER (Include Area Code) 856-339-1862
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13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
E	SF	LG	004J	Y					

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE) ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On May 24, 2007 at 0232, Salem Unit 2 tripped due to 22 Steam Generator (SG) low-low level. The cause of the low SG level trip was the failure of the 24 Demineralizer Vessel (DMV) upper sight glass, which resulted in a loss of condensate inventory and suction pressure and ultimately the trip of 21 Steam Generator Feedwater Pump (SGFP).

The 21 SGFP trip resulted in a turbine runback signal and level decrease in the 22 SG. An automatic reactor trip occurred when 2 of 3 channels reached the low-low level set point on the 22 SG. The root cause for failure of the 24 DMV upper sight glass is attributed to the latent failure to control vendor documents pertaining to the installation and maintenance of these sight glass windows. Corrective actions included replacing all Unit 2 sight glass windows prior to placing the DMV's back into service and the replacement of Unit 1 sight glass windows as the DMV's were removed from service during routine operation. All DMV sight glasses have been replaced.

This event is reportable in accordance with 10CFR50.73 (a)(2)(iv)(A), "any event or condition that resulted in manual or automatic actuation of any of the systems listed in paragraph (a)(2)(iv)(B) of this section."

LICENSEE EVENT REPORT (LER)

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Salem Generating Station Unit 2	05000311	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 4
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17. NARRATIVE (If more space is required, use additional copies of NRC Form 366A)

PLANT AND SYSTEM IDENTIFICATION

Westinghouse – Pressurized Water Reactor (PWR/4)
Condensate Demineralizer System / sight glass {SF/LG}*

* Energy Industry Identification System {EIIIS} codes and component function identifier codes appear as {SS/CCC}

IDENTIFICATION OF OCCURRENCE

Event Date: May 24, 2007

Discovery Date: May 24, 2007

CONDITIONS PRIOR TO OCCURRENCE

Salem Unit 2 was in Operational Mode 1 at 100% reactor power.

No structures, systems or components were inoperable at the time of the discovery that contributed to the event.

DESCRIPTION OF OCCURRENCE

At 1450 on May 23, 2007, the 24 Demineralizer Vessel (DMV) was placed in standby to regenerate the resin, a routine evolution to maintain system chemistry within design parameters. The vessel was removed from service and the resin bed transfers were completed at 2230.

Following the resin refill, a purge rinse was commenced on the DMV to verify proper effluent chemistry prior to placing the vessel in-service. Normal condensate flow is used as the influent and the effluent is returned to the condenser hotwells until all effluent chemistry parameters are within specifications. This evolution typically takes approximately six to eight hours.

Approximately three hours into the evolution, at 0230 on May 24, 2007, the 24 DMV upper sight glass window {SF/LG} experienced a catastrophic failure at steady state condensate operating pressure and temperature. A feedwater trouble warning light was received, followed by a low Steam Generator Feedwater Pump (SGFP) suction pressure alarm in the control room. The 21 SGFP tripped as a result of the low suction pressure, resulting in the 22 SG level decreasing to the low-low level set point (14%) and generating a reactor trip.

This event is reportable in accordance with 10CFR50.73 (a)(2)(iv)(A), "any event or condition that resulted in manual or automatic actuation of any of the systems listed in paragraph (a)(2)(iv)(B) of this section."

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17. NARRATIVE (If more space is required, use additional copies of NRC Form 366A)

PREVIOUS OCCURRENCES

A review of LERs at Salem Station identified no similar events reported to the NRC within the last three years caused by the rupture of a condensate DMV sight glass or related to the control of vendor document information.

CAUSE OF OCCURRENCE

The cause of the low SG level was a trip of 21 SGFP due to significant loss of condensate inventory and pressure. This was caused by the failure of the 24 DMV upper sight glass.

The root cause for the 24 DMV upper sight glass failure is attributed to having inadequate guidance in vendor documents pertaining to the installation and maintenance of these sight glass windows. Failure to incorporate the vendor's recommendations resulted in the re-use of the sight glass windows following gasket replacement and the application of excessive torque during the installation process. These errors resulted in localized stress concentrations that over time compromised the ability of the sight glass window to withstand the systems' normal operating pressure.

SAFETY CONSEQUENCES AND IMPLICATIONS

There were no actual safety consequences associated with this event; sufficient core cooling was always maintained. The plant remained within safety limits throughout the event. The Auxiliary Feedwater pumps started as expected. The safety systems responded to the low SG level as designed. There were no structures, systems, or components that were inoperable at the time of the event that contributed to this condition.

The spilled condensate contained low levels of tritium, which flowed out of the Condensate Polishing Building into the switchyard and subsequently into the yard drains. The maximum tritium result sampled of the contained water was below the level required to report. The condensate became mixed with rainwater from a prior storm and was accounted for via normal means of discharge.

A review of this event determined that a Safety System Functional Failure (SSFF) as defined in NEI 99-02, Regulatory Assessment Performance Indicator Guidelines, did not occur. There was no condition that alone could have prevented the fulfillment of a safety function of a system needed to remove residual heat

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CORRECTIVE ACTIONS

1. Completed a prompt investigation of event and subsequent root cause evaluation.
2. All DMV sight glass windows were replaced using the latest vendor guidance. The Unit 2 sight glasses were replaced prior to placing the DMV's in-service. The Unit 1 DMV sight glasses were replaced as the DMV's were removed from service during routine operation.
3. The applicable vendor manual will be updated to include the appropriate installation instructions and maintenance procedures for the sight glasses.

COMMITMENTS

No commitments are made in this LER.